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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b)

Docket Number (Optional): SCEI 17.966(100809-16191)

First named inventor: Nobuhiro KOMATA

Application No.: 09/758,033 Art Unit: 2673

Filed: January 10, 2001 Examiner: Prabodh M. Dharia

Title: Computer System Having a Pressure-Sensitive Controller,...

Attention: Office of Petitions
Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact Petitions Information at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the office notice or action plus an extensions of time actually obtained.

APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION

NOTE: A grantable petition requires the following items:
(1) Petition fee;
(2) Reply and/or issue fee;
(3) Terminal disclaimer with disclaimer fee - required for all utility and plant applications filed before June 8, 1995; and for all design applications; and
(4) Statement that the entire delay was unintentional.

1.Petition fee

☐ Small entity-fee $ _____ (37 CFR 1.17(m)). Applicant claims small entity status. See 37 CFR 1.27.

☐ Other than small entity – fee $ _____ (37 CFR 1.17(m))

2. Reply and/or fee

A. The reply and/or fee to the above-noted Office action in the form of an Amendment (identify type of reply):

☐ has been filed previously on _____.
☒ is enclosed herewith.

03/17/2008 CKHLOK 00000012 501290 09758033
01 FC:1453 1540.00 DA

B. The issue fee and publication fee (if applicable) of $ _____
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3. Terminal disclaimer with disclaimer fee

[X] Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.

[ ] A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of $ _____ for a small entity or $ _____ for other than a small entity) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(b) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

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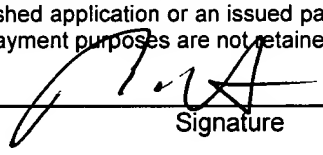

Signature — 03-13-2008 (Date)

Brian E. Hennessey — Typed or printed name

51,271 — Registration Number, if applicable

575 Madison Avenue — Address

(212) 940-6311 — Telephone Number

New York, NY 10022 — Address

Enclosures:
- [ ] Fee Payment
- [ ] Reply
- [ ] Terminal Disclaimer Form
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- [X] Other: Certified Translation of Patent Appln. No. 2000-040257

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

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This is to certify that the annexed is a true copy of the following application as filed with this office.

Date of Application: January 14, 2000

Application Number: Patent Application No. 2000-040257

Applicant(s): Sony Computer Entertainment Inc.

October 20, 2000

Commissioner,

Patent Office Kouzo Oikawa

Certificate No. 2000-3085593

2000-040257

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[Inventor]	
[Domicile or Residence]	c/o Sony Computer Entertainment Inc. 1-1, Akasaka 7-chome, Minato-ku, Tokyo
[Name]	Nobuhiro KOMATA
[Patent Applicant]	
[Identification Number]	395015319
[Name or Appellation]	Sony Computer Entertainment Inc.
[Agent]	
[Identification Number]	100101867
[Patent Attorney]	
[Name of Appellation]	Toshitake Yamamoto
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[Name of a Thing]	Specification 1
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[Name of a Thing]	Abstract 1
[Name of a Comprehensive Power of Attorney]	9900593

[Name of Document] SPECIFICATION

[Title of the Invention] SETUP METHOD FOR A CONTROLLER, RECORDING MEDIUM THAT RECORDS THIS METHOD, AND COMPUTER SYSTEM HAVING A PRESSURE-SENSITIVE CONTROLLER

[Scope of Claims for a Patent]

[Claim 1] In a setup method for a controller that gives instructions to a computer running software depending on a pushing pressure by a user on a control element connected to a pressure-sensitive device of the controller,

said controller setup method, comprising:

an instruction step wherein the user is instructed to push said control element with at least a maximum strength,

a storage step wherein a value obtained when said control element is pushed by the user, is stored as the maximum value; and

a correction step wherein, based on said maximum value and a pressure-sensing value table defined in said software or various pressure-sensing values, a new corrected pressure-sensing value table or various new corrected pressure-sensing values are generated.

[Claim 2] In a recording medium on which is recorded a computer-readable and executable software program containing a setup program for a controller that gives instructions to a computer running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller;

said recording medium, wherein said setup program comprises:

an instruction step wherein the user is instructed to push said control element with at least a maximum strength;

a storage step wherein a value obtained when said control element is pushed by the user is stored as the maximum value, and

a correction step wherein, based on said maximum value and a pressure-sensing value table defined in said software or various pressure-sensing values, a new corrected pressure-sensing value table or various new corrected pressure-sensing values are generated.

[Claim 3] The recording medium as claimed in Claim 2, wherein said corrected pressure-sensing value table or various corrected pressure-sensing values are stored in a storage unit provided internally in or external of said computer.

[Claim 4] In a computer system having a pressure-sensitive controller that gives instructions to a computer processor running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller;

said computer system, comprising:

instruction providing means for instructing the user to push said control element with at least a maximum strength;

storage means for storing a value obtained when said control element is pushed by the user as the maximum value; and

correction means for generating, based on said maximum value and a pressure-sensing value table defined in software or various pressure-sensing values, a new corrected pressure-sensing value table or various new corrected pressure-sensing values.

[Claim 5] The computer system as claimed in Claim 4, wherein said corrected pressure-sensing value table or various corrected pressure-sensing values are stored in a storage unit internal to or external to said computer.

[Claim 6] The computer system as claimed in Claim 4, wherein said computer system is an entertainment system.

[Detailed Description of the Invention]

[0001]

[Technical Field Pertinent to the Invention]

The present invention relates to a novel setup method for a pressure-sensitive controller from which output (pressure-sensing values) corrected for differences in the body weights of users is obtained. It also relates to a recording medium that records a software program containing a setup program for such a controller, along with a computer system that has a pressure-sensitive controller

[0002]

[Prior Art]

For example, as prior art, a pressure-sensitive type controller was disclosed in the publication of examined Japanese utility model application No. JP-B-H1-40545, wherein pressure-sensitive output is provided as input to a VCO (variable control oscillator) and the output of the VCO is used for repeated fire in a game.

[0003]

[Problem that this invention is to solve]

A pressure-sensitive controller is a unit wherein, when pressure is applied with a finger directly to a control element connected to a pressure-sensitive device, the pushing pressure is provided as output as a pressure-sensing value. Thus, differences in body weights and differences in reflexes such as between children and adults, young people and elderly people, men and women and the like are reflected as is in the output of the controller.

[0004]

This may lead to a problem on execution of a game, various software and so on with such a pressure-sensing controller. The pressure-sensing value when the greatest pressure and the pressure-sensing value when the least pressure is applied may be different depending upon users.

[0005]

The change rate, i.e., the rate of increase or rate of decrease, in pushing pressure per unit of time is different depending on a user's body weight.

[0006]

[Means for Solving the Problems]

The present invention is made to solve the above problem. It is an object of the present invention to provide a new pressure-sensing controller. Moreover, it is another object of the present invention to provide a new pressure-sensing controller which can provide, in execution of various programs, a pressure-sensing values obtained by correction of difference among user's pressure-sensing values.

A setup method according to the present invention is a setup method for a controller that gives instructions to a computer running software depending on the pushing pressure on a control element connected to a pressure-sensitive device, wherein the setup method comprises: an instruction step wherein the user is instructed to push said control element with at least a maximum strength, a storage step wherein the value obtained when said control element is pushed is stored as the maximum value, and a correction step wherein, based on said maximum value and a pressure-sensing value table defined in software or various pressure-sensing values, a new pressure-sensing value table or various new pressure-sensing values are generated.

[0007]

A recording medium according to the present invention is a recording medium on which is recorded a computer-readable and executable software program containing a setup program for a controller that gives instructions to a computer running software depending on the pushing pressure of a user on a control element connected to a pressure-sensitive device, wherein the setup program comprises: an instruction step wherein the user is instructed to push the control element with at least a maximum strength, a storage step wherein the value obtained when the control element is pushed is stored as the maximum value, and a correction step wherein, based on said

maximum value and a pressure-sensing value table defined in software or various pressure-sensing values, a new pressure-sensing value table or various new pressure-sensing values are generated.

[0008]

A computer system according to the present invention comprises a pressure-sensitive controller that gives instructions to a computer processor running software depending on the pushing pressure of a user on a control element connected to a pressure-sensitive device; instruction means whereby the user is instructed to push the control element with at least a maximum strength, storage means the value obtained when the control element is pushed is stored as the maximum value, and correction means whereby, based on said maximum value and a pressure-sensing value table defined in software or various pressure-sensing values, a new pressure-sensing value table or various new pressure-sensing values are generated.

[0009]

[Mode for carrying out the Invention]

A pressure-sensing controller according to an embodiment of the present invention will be described in detail with reference to the accompanying drawings. In the drawings, like elements and parts are marked with the same reference numerals and hence need not be described.

[0010]

As described above, in a controller that uses a pressure-sensitive device, when the button is pushed by a user, values that depend on the pushing pressure are provided as an output. On the other hand, in software or games that use pressure-sensitive output, the pressure- sensing values required to activate various processes or actions are expected to be predetermined. Unless some sort of manipulation is done between the user pressure- sensing values and the game pressure- sensing values, there is a possibility that differences in user's body weights and differences in reflexes may give

a stronger person an advantage over a weaker person, for example, or make it more or less easy to use.

[0011]

According to an embodiment, a maximum value of an individual user is previously measured, and a correction table used for allocating a set value in a predetermined software is prepared based on the maximum value. Inconvenience arising from difference among user's body weights is avoided by using this correction table upon execution of a software.

[0012]

Fig. 1 shows the connection of a controller to an entertainment system to enable a user to enjoy game software or video. More specific structure is shown in Fig. 6 and the subsequent figures.

[0013]

As shown in Fig. 2, a controller 200 which has buttons connected to pressure-sensitive devices within the controller is connected to an entertainment system 500 used for playing games or enjoying DVD video or other types of video images, and the video output terminals are connected to a television monitor 408.

[0014]

Here, the analog output from the pressure-sensitive devices is converted by an A/D converter to digital values in the range 0-255 and provided to the entertainment system 500.

[0015]

With reference to Fig. 2 on, here follows a description of how the aforementioned correction table is generated and how it is used at the time of execution of software. It is noted that the program shown in the form of a flowchart is run by the entertainment system 500 and executed by this CPU.

[0016]

Fig. 2 is a flowchart showing the program for sampling the maximum value when the user pushes the buttons with the maximum force, which serves as the basis for generating the correction table. This program can be executed when it is solely recorded on a recording medium such as an optical disk and when it is recorded on a recording medium together with game software programs.

[0017]

Providing a correction program solely recorded on a recording medium means that it is previously prepared for software development as a library. As well known, it takes a lot of time to produce all functions upon development of a software. However,

[0018]

Then, it becomes possible to provide common functions as described in the present embodiment as library programs with software manufacturers. Software manufacturers are provided with such generalized common functions from the outside as library programs, and hence can concentrate themselves into production of essential parts of the software which are other than the common functions.

[0019]

When the aforementioned program is read from media and run on the entertainment system 500, control moves to Step S1.

[0020]

In step S1, a message reading "This setup program sets the controller output to match your strength. Please press any button with one finger for two seconds or longer with the maximum strength you think you can manage during the game." or the like is displayed on the television monitor 408 shown in Fig. 2, prompting the user for input.

[0021]

In Step S2, a decision is made as to whether or not user input is present, and if input is present, control procedure moves to Step S3 where a user pressure-sensing value is acquired. When a button of the controller 200 is pushed by the user, the

pressure-sensing value generated by this pushing is provided to the entertainment system 500.

[0022]

In Step S4, a decision is made as to whether or not the user has finished pushing the button, namely a decision is made as to whether the user pressure-sensing value is "0" or not, and if not "0" then control goes back to Step S3, and if "0" then control procedure advances to Step S5 and a message reading "Your maximum value has been sampled. Is this OK?" or the like is displayed. It should be noted that in the entertainment system, the pressure-sensing output value from the controller 200 may be stored for one frame (1/30 second), for example.

[0023]

In Step S6, when the user uses the controller 200 to select "YES" from between the choices of "YES" and "NO" displayed on the television monitor 408, control procedure advances to Step S7 and a message reading "Searching for your maximum value. Please wait." or the like is displayed. If "NO" is selected, control procedure again advances to Step S1.

[0024]

In Step S8, among the stored output values (user pressure-sensing values) from the controller 200, a search for the maximum value (the maximum user pressure-sensing value) is performed, and in Step S9, the maximum user sensing value detected is stored.

[0025]

In Step S10, a message reading "Complete" or the like is displayed and the process is complete. It is noted that the storage means that stores the maximum value is preferably, for example, the internal memory or removable card-type external memory of the entertainment system 500.

[0026]

When such removable card-type external memory is used, use of the same pressure-sensing controller and invoke of a user's own pressure-sensing data allows the user to prepare a proper correction table (see Fig. 4) corresponding to different software programs, without obtaining the maximum pressure shown in Fig. 2.

[0027]

Fig. 3 is a flowchart showing an embodiment of a program for generating a correction table using the maximum value found in Fig. 2. Of course, any other program that is able to create a correction table may also be used. Like the program that samples the maximum value, this program is also recorded on a recording medium alone or together with the software.

[0028]

In Step S20, control information regarding the controller is acquired from the software recorded upon the media loaded in the entertainment system 500. This is because depending on the software, pressure-sensing value output may not reflect the processing of software, etc. as is. For example, in the event that the role of the controller 200 is adequate as a simple ON/OFF, pressure-sensing output is unnecessary.

[0029]

In Step S21, a decision is made as to whether the pressure-sensing values are to be used in an analog fashion or not, and if "YES" control procedure advances to Step S22 and if "NO" the process ends.

[0030]

In Step S22, the game-side maximum value G_{max} prepared in advance on the software side is acquired.

[0031]

In Step S23, a decision is made as to whether a memory card is present or not, and if "YES" control procedure advances to Step S25 where user input is detected by means of the procedure described in Fig. 3 and a decision is made as to whether or not

the stored user-side maximum value U_{max} is present, and if "NO" a message reading "Please insert a memory card." or the like is displayed in Step S24.

[0032]

If the result of the decision in Step S25 is "YES" then control procedure advances to Step S27 and the user-side maximum value U_{max} is acquired, and if the result of the decision is "NO" then a message reading "Please reinsert the memory card where your maximum values are stored." or the like is displayed.

[0033]

In Step S28, the value software-side maximum value G_{max} is divided by the user-side maximum value U_{max} to find the correction coefficient X. For example, if the software maximum value Gmax is changed in 256 steps within the range from 0 to 256, then the .software maximum value is 256. If the measured maximum user-pressing value Umax is 31, then the user maximum value is changed 32 steps. Accordingly, the correction coefficient X = Gmax / Umax = 256 / 32 = 8 is established.

[0034]

In Step S29, the first soft allocation value Y1 is set when the software value is increased by the number X of the correction coefficients from the software maximum value Gmin, i.e., to the software set value G=7.

[0035]

In Step S30, the minimum user value Umin = 0 is allocated to the software allocation value Y1.

[0036]

In Step S31, the software allocation value Y1 is subtracted from the software maximum value Gmax, and then the next software allocation value is calculated.

[0037]

In Step S32, the minimum user value Umin is added with "1" to calculate the user allocation value U.

[0038]

In Step S33, the new user allocation value U calculated in Step 32 is allocated to the new software allocation value Y calculated in Step S31.

[0039]

In Step 34, it is determined whether or not the user allocation value Y is smaller than "0". If it is determined as represented by "YES", then in step S35 a table is generated and stored in a memory card. If on the other hand it is determined as represented by "NO", then the process proceeds to step S31 again.

[0040]

Fig. 4 shows an example of the table generated by the above process. This example shows the case wherein the user maximum value U_{max} is "24," so there are 25 steps from "0" to "24," and the software-side maximum value G_{max} is "255" so there are 256 steps from "0" to "256." To wit, each user pressure-sensing value U in one step is allocated to "10" steps of the game pressure-sensing value G, in the manner "0"-"9", "10"-"19", "20"-"29", etc. Note that the maximum value "24" of the user-side allocated value is allocated to "16" steps of the software-side allocated values from "240"-"255".

[0041]

When this table is used, when the user presses a button of the controller 200, if the user pressure-sensing value is "2" for example, the game pressure-sensing value will be recognized on the software side to be "26"-"29" and processing based thereupon will be performed. It is noted that on the software side, the values within the various aforementioned ranges, namely, "0"-"9", "10"-"19", "20"-"29", etc can be used freely. For example, it may use the maximum value or minimum value within each range, or use the average value within each range.

[0042]

Fig. 5 is a flowchart that shows the state when a correction table such as that shown in Fig. 4 is used.

[0043]

In Step S50, data is acquired from the controller 200, and in Step S51, data conversion of the user pressure-sensing values to game pressure-sensing values is performed based on a correction table such as that shown in Fig. 4, and in Step S52, processing is performed based on the converted data and processing ends if Step S53 comes to that decision.

[0044]

It should be noted that depending on the software, according to its purpose, 256 steps of pressure-sensing values may not be defined, but only roughly two or three specific pressure-sensing values and their range of fluctuation are defined. In this case, the number of steps will be lower on the game side and higher on the user side. Accordingly, in this case, the operation for allocating a number of user pressure-sensing values to a single game pressure- sensing value G is shown in Fig. 3, where in Step S28, the operation $X = U_{max}/G_{max}$ is executed, and in Step S29, the operation $Y = U_{max}-Y$ is executed, and in Steps S30on, it is sufficient to exchange the user pressure-sensing values U and game pressure-sensing values G.

[0045]

Since this preferred embodiment is constituted and functions as described above, differences in pushing pressure due to differences in the strength of users are less reflected as is in the controller output (pressure-sensing values). As a result, it is possible to prevent the problems when such pressure-sensitive controllers are used to execute games and various types of software and the like.

[0046]

Moreover, changes in the pushing speed, namely the rate of change in the magnitude of the pushing force per unit time, or namely changes in the rate of increase or rate of decrease depending on differences in the strength of the user can be kept low.

[0047]

Moreover, by means of this preferred embodiment, it is possible to provide a novel pressure-sensitive controller that, at the time of execution of various types of programs, gives pressure-sensing values corrected for differences in the user pressure-sensing values.

[0048]

Here follows a description of an embodiment of the present invention in the case of its application to the controller of an entertainment system which is one example of a computer system.

[0049]

Fig. 6 is a perspective view of the controller 200 connected to the entertainment system 500. The controller 200 is removably connected to the entertainment system 500, and the entertainment system 500 is connected to a television monitor 408.

[0050]

The entertainment system 500 reads the program for a computer game from recording media upon which that program is recorded, and by executing the program, has a function for displaying characters on the television monitor 408. The entertainment system 500 also has various built-in functions for DVD (Digital Versatile Disc) playback, CDDA (compact disc digital audio) playback and the like. The signals from the controller 200 are also processed as one of the aforementioned control functions within the entertainment system 500, and the content thereof may be reflected in the movement of characters and the like on the television monitor 408.

[0051]

While this depends also on the content of the computer game program, controller 200 may be allocated functions for moving the characters displayed on the television monitor 408 in the directions up, down, left or right.

[0052]

With reference to Fig. 7, here follows a description of the interior of the entertainment system 500 shown in Fig. 6. Fig. 7 is a block diagram of the entertainment system 500.

[0053]

A CPU 401 is connected to RAM 402 and a bus 403, respectively. Connected to bus 403 are a graphics processor unit (GPU) 404 and an input/output processor (I/O) 409, respectively. The GPU 404 is connected via an encoder 407 for converting a digital RGB signal or the like into the NTSC standard television format, for example, to a television monitor (TV) 408 as a peripheral. Connected to the I/O 409 are a driver (DRV) 410 used for the playback and decoding of data recorded upon an optical disc 411, a sound processor (SP) 412, an external memory 415 consisting of flash memory, controller 200 and a ROM 416 which records the operating system and the like. The SP 412 is connected via an amplifier 413 to a speaker 414 as a peripheral.

[0054]

Here, the external memory 415 may be a card-type memory consisting of a CPU or a gate array and flash memory, which is removably connected via a connector 511 to the entertainment system 500 shown in Fig. 6. The controller 200 is constructed such that, when a plurality of buttons provided thereupon are pushed, it gives instructions to the entertainment system 500. In addition, the driver 410 is provided with a decoder for decoding images encoded based upon the MPEG standard.

[0055]

The description will be made now as to how the images will be displayed upon the television monitor 408 based on the operation of the controller 200. It is assumed

that data for objects consisting of polygon vertex data, texture data and the like recorded on the optical disc 411 is read by the driver 410 and stored in the RAM 402 of the CPU 401.

[0056]

When instructions from the player via controller 200 are provided as an input to the entertainment system 500, the CPU 401 calculates the three-dimensional position and orientation of objects with respect to the point of view based on these instructions. Thereby, the polygon vertex data for objects defined by X, Y, Z coordinate values are modified variously. The modified polygon vertex data is subjected to perspective conversion processing and converted into two-dimensional coordinate data.

[0057]

The regions specified by two-dimensional coordinates are so-called polygons. The converted coordinate data, Z data and texture data are supplied to the GPU 404. Based on this converted coordinate data, Z data and texture data, the GPU 404 performs the drawing process by writing texture data sequentially into the RAM 405. One frame of image data upon which the drawing process is completed is encoded by the encoder 407 and then supplied to the television monitor 408 and displayed on its screen as an image.

[0058]

Fig. 8 is a top view of the controller 200. The controller 200 consists of a unit body 201 on the top surface of which are provided first and second control parts 210 and 220, and on the side surface of which are provided third and fourth control parts 230 and 240 of the controller.

[0059]

The first control part 210 of the controller is provided with a cruciform control unit 211 used for pushing control, and the individual control keys 211a extending in each of the four directions of this control unit 211 form a control element. The first

control part 210 is the control part for providing movement to the characters displayed on the screen of the television receiver, and has functions for moving the characters in the up, down, left and right directions by pressing the individual control keys 211a of the control unit 211.

[0060]

The second control part 220 is provided with four cylindrical control buttons 221 (control elements) for pushing control. The individual control buttons 221 have identifying marks such as O, Δ, □, and × on their tops, in order to easily identify the individual control buttons 221. The functions of the second control part 220 are set by the game program recorded upon the optical disc 411, and the individual control buttons 221 may be allocated functions that change the state of the game characters, for example. For example, the control buttons 221 may be allocated functions for moving the left arm, right arm, left leg and right leg of the character.

[0061]

The third and fourth control parts 230 and 240 of the controller 200 have nearly the same structure, and both are provided with two control buttons 231 and 241 (control elements) for pushing control, arranged above and below. The functions of these third and fourth control parts 230 and 240 are also set by the game program recorded upon the optical disc, and may be allocated functions for making the game characters do special actions, for example.

[0062]

Moreover, two joy sticks 251 for performing analog operation are provided upon the unit body 201 shown in Fig. 8. The joy sticks 251 can be switched and used instead of the first and second control parts 210 and 220 described above. This switching is performed by means of an analog selection switch 252 provided upon the unit body 201. When the joy sticks 251 are selected, a display lamp 253 provided on the unit body 201 lights, indicating the state wherein the joy sticks 251 are selected.

[0063]

It should be noted that on unit body 201 there are also provided a start switch 254 for starting the game and a select switch 255 for selecting the degree of difficulty or the like at the start of a game, and the like.

[0064]

Fig. 9 and Fig. 10 show an embodiment of the second control part 220 of the controller.

[0065]

As shown in Fig. 9, the second control part 220 consists of four control buttons 221 which serve as the control elements, an elastic body 222, and a sheet member 223 provided with resistors 40. The individual control buttons 221 are inserted from behind through insertion holes 201a formed on the upper surface of the unit body 201. The control buttons 221 inserted into the insertion holes 201a are able to move freely in the axial direction.

[0066]

The elastic body 222 is made of insulating rubber or the like and has elastic areas 222a which protrude upward, and the lower ends of the control buttons 221 are supported upon the upper walls of the elastic areas 222a. When the control buttons 221 are pressed, the inclined-surface portions of these elastic areas 222a flex so that the upper walls move together with the control buttons 221. On the other hand, when the pushing pressure on the control buttons 221 is released, the flexed inclined-surface portions of these elastic areas 222a elastically return to their original shape, pushing up the control buttons 221. The elastic body 222 functions as a spring means whereby control buttons 221 which had been pushed in by a pushing action are returned to their original positions. As shown in Fig. 10, conducting members 50 are attached to the rear surface of the elastic body 222.

[0067]

The sheet member 223 consists of a membrane or other thin sheet material which has flexibility and insulating properties. Resistors 40 are provided in appropriate locations on this sheet member 223 and these resistors 40 and conducting member 50 are each disposed such that they face one of the control buttons 221 via the elastic body 222. The resistors 40 and conducting members 50 form pressure-sensitive devices. These pressure-sensitive devices consisting of resistors 40 and conducting members 50 have resistance values that vary depending on the pushing pressure received from the control buttons 221.

[0068]

To describe this in more detail, as shown in Fig. 10, the second control part 220 is provided with control buttons 221 as control elements, an elastic body 222, conducting members 50 and resistors 40. Each conducting member 50 may be made of conductive rubber which has elasticity, for example, and has a conical shape with its center as a vertex. The conducting members 50 are adhered to the inside of the top surface of the elastic areas 222a formed in the elastic body 222.

[0069]

In addition, the resistors 40 may be provided on an internal board 204, for example, opposite the conducting members 50, so that the conducting members 50 come into contact with resistors 40 together with the pushing action of the control buttons 221. The conducting member 50 deforms depending on the pushing force on the control button 221 (namely the contact pressure with the resistor 40), so as shown in Fig. 10 B and 10C, the surface area in contact with the resistor 40 varies depending on the pressure. To wit, when the pressing force on the control button 221 is weak, as shown in Fig. 10B, only the area near the conical tip of the conducting member 50 is in contact. As the pressing force on the control button 221 becomes stronger, the tip of the conducting member 50 deforms gradually so the surface area in contact expands.

[0070]

Fig. 10 is a diagram showing an equivalent circuit for a pressure-sensitive device consisting of a resistor 40 and conducting member 50. As shown in this diagram, the pressure-sensitive device is inserted in series in a power supply line 13, where the voltage V_{CC} is applied between the electrodes 40a and 40b. As shown in this diagram, the pressure-sensitive device is divided into a variable resistor 42 that has the relatively small resistance value of the conducting member 50, and a fixed resistor 41 that has the relatively large resistance value of the resistor 40. Among these, the portion of the variable resistor 42 is equivalent to the portion of resistance in the contact between the resistor 40 and the conducting member 50, so the resistance value of the pressure-sensitive device varies depending on the surface area of contact with the conducting member 50.

[0071]

When the conducting member 50 comes into contact with the resistor 40, in the portion of contact, the conducting member 50 becomes a bridge and a current flows, so the resistance value becomes smaller in the portion of contact. Therefore, the greater the surface area of contact between the resistor 40 and conducting member 50, the lower the resistance value of the pressure-sensitive device becomes. In this manner, the entire pressure-sensitive device can be understood to be a variable resistor.

[0072]

In this preferred embodiment, an output terminal is provided near the boundary between variable resistor 42 and fixed resistor 41, namely near the intermediate point of the resistors 40, and thus a voltage stepped down from the applied voltage V_{CC} by the amount the variable resistance is extracted as an analog signal corresponding to the pushing pressure on the control button 221.

[0073]

First, since a voltage is applied to the resistor 40 when the power is turned on, even if the control button 221 is not pressed, a fixed analog signal (voltage) V_{min} is

provided as the output from the output terminal 40c. Next, even if the control button 221 is pressed, the resistance value of this resistor 40 does not change until the conducting member 50 contacts the resistor 40, so the output from the resistor 40 remains unchanged at V_{min}. If the control button 221 is pushed further and the conducting member 50 comes into contact with the resistor 40, the surface area of contact between the conducting member 50 and the resistor 40 increases in response to the pushing pressure on the control button 221, and thus the resistance of the resistor 40 is reduced so the analog signal (voltage) output from the output terminal 40c of the resistor 40 increases. Furthermore, the analog signal (voltage) output from the output terminal 40c of the resistor 40 reaches the maximum V_{max} when the conducting member 50 is most deformed.

[0074]

Fig. 12 is a block diagram showing the main parts of the controller 200.

[0075]

An MPU 14 mounted upon the internal board of the controller 200 is provided with a switch 18 and an A/D converter 16. The analog signal (voltage) output from the output terminal 40c of the resistor 40 is provided as input to the A/D converter 16 and converted to a digital signal.

[0076]

The digital signal outputted from the A/D converter 16 is sent via an interface 17 provided upon the internal board of the controller 200 to the entertainment system 500 and the actions of game characters and the like are executed based on this digital signal.

[0077]

Changes in the level of the analog signal output from the output terminal 40c of the resistor 40 correspond to changes in the pushing pressure received from the control button 221 (control element) as described above. Therefore, the digital signal output

from the A/D converter 16 corresponds to the pushing pressure on the control button 221 (control element) from the user. If the actions of the game characters and the like are controlled based on the digital signal that has such a relationship with the pushing pressure from the user, it is possible to achieve smoother and more analog-like action than with control based on a binary digital signal based only on zeroes and ones.

[0078]

The configuration is such that the switch 18 is controlled by a control signal sent from the entertainment system 500 based on a game program recorded on an optical disc 411. To wit, when a game program recorded on optical disc is executed by the entertainment system 500, depending on the content of the game program, a control signal is provided as output to specify whether the A/D converter 16 is to function as a means of providing output of a multi-valued analog signal, or as a means of providing a binary digital signal. Based on this control signal, the switch 18 is switched to select the function of the A/D converter 16.

[0079]

Figs. 13 and 14 show an embodiment of the first control part of the controller.

[0080]

As shown in Fig. 13, the first control part 210 includes a cruciform control unit 211, a spacer 212 that positions this control unit 211, and elastic body 213 that elastically supports the control unit 211. Moreover, as shown in Fig. 15, a conducting member 50 is attached to the rear surface of the elastic body 213, and the configuration is such that resistors 40 are disposed at the positions facing the individual control keys 211a (control elements) of the control unit 211 via the elastic body 213.

[0081]

The overall structure of the first control part 210 already has been made public knowledge in the publication of unexamined Japanese patent application No. JP-A-H8-163672. However, the control unit 211 uses a hemispherical projection 212a formed in

the center of the spacer 212 as a fulcrum, and the individual control keys 211a (control elements) are assembled such that they can push upon the resistor 40 side (see Fig. 15).

[0082]

Conducting members 50 are adhered to the inside of the top surface of the elastic body 213 in positions corresponding to the individual control keys 211a (control elements) of the cruciform control unit 211. In addition, the resistors 40 with a single structure are disposed such that they face the individual conducting members 50.

[0083]

When the individual control keys 211a which are control elements are pushed, the pushing pressure acts via the elastic body 213 on the pressure-sensitive devices consisting of a conducting member 50 and resistor 40, so its electrical resistance value varies depending on the magnitude of the pushing pressure.

[0084]

Fig. 15 is a diagram showing the circuit configuration of the resistor. As shown in this diagram, the resistor 40 is inserted in series in a power supply line 13, where a voltage is applied between the electrodes 40a and 40b. The resistance of resistor 40 is illustrated schematically, as shown in this diagram, the resistor 40 is divided into first and second variable resistors 43 and 44. Among these, the portion of the first variable resistor 43 is in contact, respectively, with the conducting member 50 that moves together with the control key (up directional key) 211a for moving the character in the up direction, and with the conducting member 50 that moves together with the control key (left directional key) 211a for moving the character in the left direction, so its resistance value varies depending on the surface area in contact with these conducting members 50.

[0085]

In addition, the portion of the second variable resistor 44 is in contact, respectively, with the conducting member 50 that moves together with the control key

(down directional key) 211a for moving the character in the down direction, and with the conducting member 50 that moves together with the control key (right directional key) 211a for moving the character in the right direction, so its resistance value varies depending on the surface area in contact with these conducting members 50.

[0086]

Moreover, an output terminal 40c is provided intermediate between the variable resistors 43 and 44, and an analog signal corresponding to the pushing pressure on the individual control keys 211a (control elements) is provided as output from the output terminal 40c.

[0087]

The output from the output terminal 40c can be calculated from the ratio of the split in resistance value of the first and second variable resistors 43 and 44. For example, if R1 is the resistance value of the first variable resistor 43, R2 is the resistance value of the second variable resistor 44 and V_{CC} is the power supply voltage, then the output voltage V appearing at the output terminal 40c can be expressed by the following equation.

[0088]

$$V = V_{CC} \times R2 / (R1 + R2)$$

[0089]

Therefore, when the resistance value of the first variable resistor 43 decreases, the output voltage increases, but when the resistance value of the second variable resistor 44 decreases, the output voltage also decreases.

[0090]

Fig. 16 is a graph showing the characteristic of the analog signal (voltage) output from the output terminal of the resistor.

[0091]

First, since a voltage is applied to the resistor 40 when the power is turned on, even if the individual control keys 211a of the control unit 211 are not pressed, a fixed analog signal (voltage) V_0 is provided as output from the output terminal 40c (at position 0 in the graph).

[0092]

Next, even if one of the individual control keys 211a is pressed, the resistance value of this resistor 40 does not change until the conducting member 50 contacts the resistor 40, and the output from the resistor 40 remains unchanged at V_0.

[0093]

Furthermore, if the up directional key or left directional key is pushed until the conducting member 50 comes into contact with the first variable resistor 43 portion of the resistor 40 (at position p in the graph), thereafter the surface area of contact between the conducting member 50 and the first variable resistor 43 portion increases in response to the pushing pressure on the control key 211a (control elements), and thus the resistance of that portion is reduced so the analog signal (voltage) output from the output terminal 40c of the resistor 40 increases. Furthermore, the analog signal (voltage) output from the output terminal 40c of the resistor 40 reaches the maximum V_{max} when the conducting member 50 is most deformed (at position q in the graph).

[0094]

On the other hand, if the down directional key or right directional key is pushed until the conducting member 50 comes into contact with the second variable resistor 44 portion of the resistor 40 (at position r in the graph), thereafter the surface area of contact between the conducting member 50 and the second variable resistor 44 portion increases in response to the pushing pressure on the control key 211a (control element), and thus the resistance of that portion is reduced, and as a result, the analog signal (voltage) output from the output terminal 40c of the resistor 40 decreases. Furthermore, the analog signal (voltage) output from the output terminal 40c of the resistor 40

reaches the minimum V_{min} when the conducting member 50 is most deformed (at position s in the graph).

[0095]

As shown in Fig. 17, the analog signal (voltage) output from the output terminal 40c of the resistor 40 is provided as input to an A/D converter 16 and converted to a digital signal. Note that the function of the A/D converter 16 shown in Fig. 17 is as described previously based on Fig. 12, so a detailed description shall be omitted here.

[0096]

Fig. 18 is an exploded perspective view of an example of the constitution of the third control part of the controller.

[0097]

The third control part 230 consists of two control buttons 231, a spacer 232 for positioning these control buttons 231 within the interior of the controller 200, a holder 233 that supports these control buttons 231, an elastic body 234 and an internal board 235, having a structure wherein resistors 50 are attached to appropriate locations upon the internal board 235 and conducting members 50 are attached to the rear surface of the elastic body 234.

[0098]

The overall structure of the third control part 230 also already has been made public knowledge in the publication of unexamined Japanese patent application No. JP-A-H8-163672. However, the individual control buttons 231 can be pushed in while being guided by the spacer 232. The pushing pressure when control buttons are pressed acts via the elastic body 234 on the pressure-sensitive device consisting of a conducting member 50 and resistor 40. The electrical resistance value of the pressure-sensitive device varies depending on the magnitude of the pushing pressure it receives.

[0099]

It is noted that the fourth control part 240 has the same structure as that of the third control part 230 described above.

[0100]

[Effect of the Invention]

Since this preferred embodiment is constituted and functions as described above, differences in pushing pressure due to differences in the strength of users are less reflected as is in the controller output (pressure-sensing values). As a result, it is possible to prevent the problems when such pressure-sensitive controllers are used to execute games and various types of software and the like. Moreover, changes in the pushing speed, namely the rate of change in the magnitude of the pushing force per unit time, or namely changes in the rate of increase or rate of decrease depending on differences in the strength of the user can be kept low.

[0101]

Moreover, due to this invention, it is possible to provide a novel pressure-sensitive controller that, at the time of execution of various types of programs, gives pressure-sensing values corrected for differences in the user pressure-sensing values.

[Brief Description of the Drawings]

[Fig. 1]

A diagram showing the connection of an entertainment system to a controller.

[Fig. 2]

A flowchart showing a program for sampling the maximum value when a controller button or a switch is pushed by a user.

[Fig. 3]

A flowchart showing a program for generating a correction table.

[Fig. 4]

A diagram showing an embodiment of a correction table.

[Fig. 5]

A flowchart showing state wherein a correction table is used.

[Fig. 6]

A perspective view of a controller connected to an entertainment system.

[Fig. 7]

A block diagram of an entertainment system.

[Fig. 8]

A top view of a controller.

[Fig. 9]

An exploded perspective view of the second control part of the controller.

[Fig. 10]

Cross-sectional diagrams showing the second control part of the controller.

[Fig. 11]

A diagram showing an equivalent circuit for a pressure-sensitive device.

[Fig. 12]

A block diagram of the main parts of the controller.

[Fig. 13]

A n exploded perspective view of the first control part of the controller.

[Fig. 14]

A cross section of the first control part.

[Fig. 15]

A diagram showing the circuit configuration of a resistor.

[Fig. 16]

A graph showing the characteristic of the output signal.

[Fig. 17]

A block diagram showing the overall constitution including a resistor.

[Fig. 18]

An exploded perspective view of the third control part of the controller.

[Name of the Document] ABSTRACT

[Summary]

[Problem] To allow a user to easily use an interface when pressing an ON/OFF button for variable-speed playback and continuation of pressing button..

[Solving Means] In order to minimize differences in a pushing speed of a user pushing control elements of a controller in, for example, an entertaining system, arising from differences in the body weights of users, the gives instructions to a computer running software depending on the pushing pressure of the user on the control element connected to a pressure-sensitive device of the controller. The controller is set up to instruct the user to push the control element with at least a maximum strength. The value obtained when the control element is pushed, is stored as the maximum value. Based on the maximum value and a pressure-sensing value table defined in software or various pressure-sensing values, a new pressure-sensing value table or various new pressure-sensing values are generated.

[Selected Diagram] FIG. 3

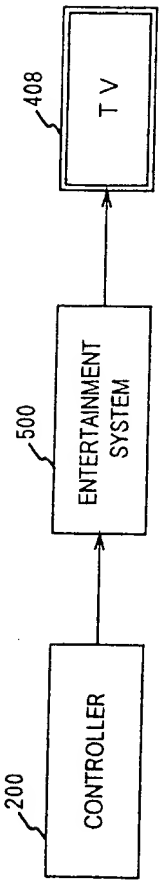


FIG. 1

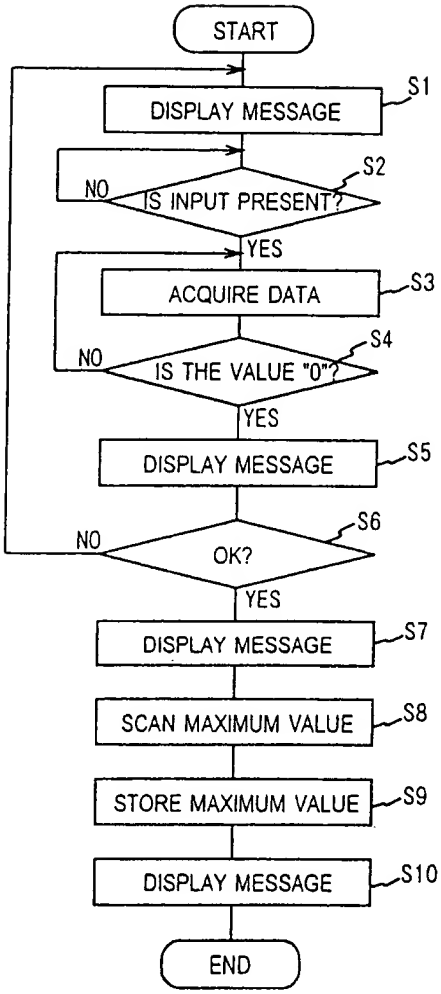

START
DISPLAY MESSAGE
S1
NO
IS INPUT PRESENT?
S2
YES
ACQUIRE DATA
S3
NO
IS THE VALUE "0"?
S4
YES
DISPLAY MESSAGE
S5
NO
OK?
S6
YES
DISPLAY MESSAGE
S7
SCAN MAXIMUM VALUE
S8
STORE MAXIMUM VALUE
S9
DISPLAY MESSAGE
S10
END

FIG. 2

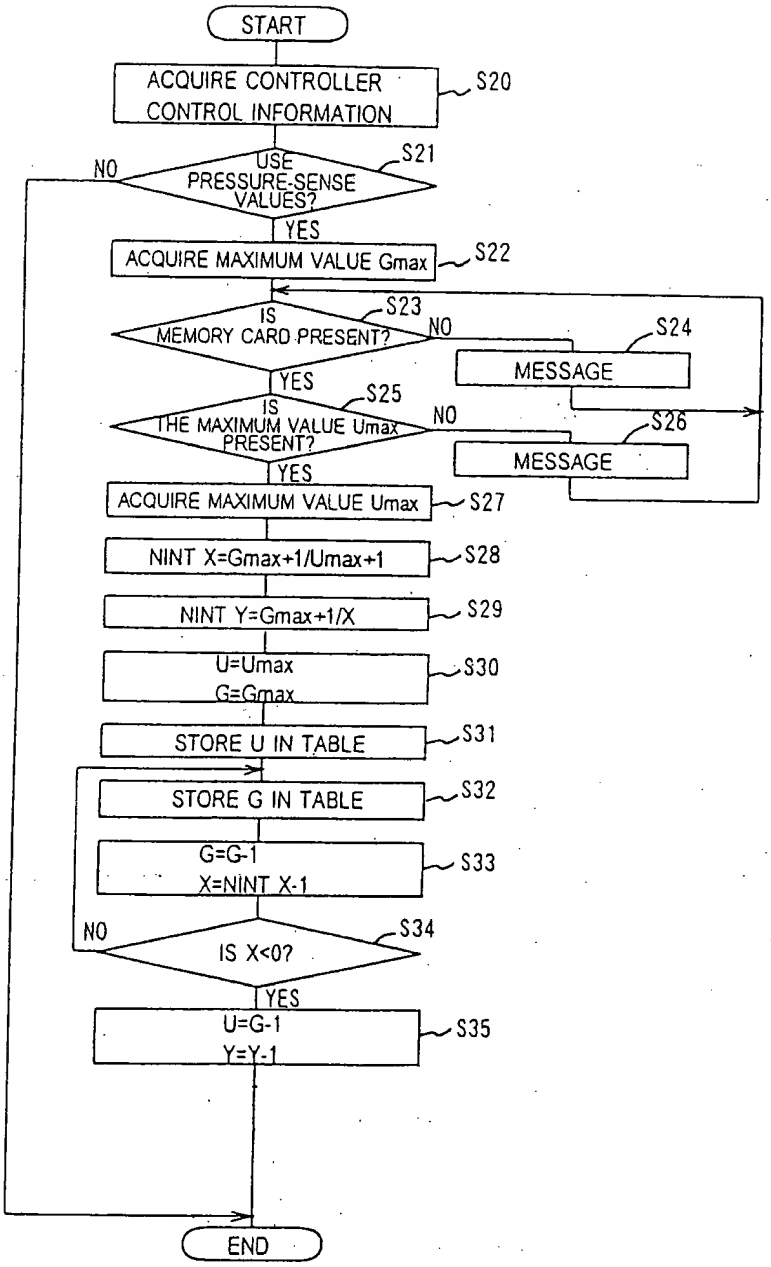

START
ACQUIRE CONTROLLER CONTROL INFORMATION
S20
USE PRESSURE-SENSE VALUES?
S21
NO
YES
ACQUIRE MAXIMUM VALUE Gmax
S22
IS MEMORY CARD PRESENT?
S23
NO
S24
MESSAGE
YES
IS THE MAXIMUM VALUE Umax PRESENT?
S25
NO
S26
MESSAGE
YES
ACQUIRE MAXIMUM VALUE Umax
S27
NINT X=Gmax+1/Umax+1
S28
NINT Y=Gmax+1/X
S29
U=Umax
G=Gmax
S30
STORE U IN TABLE
S31
STORE G IN TABLE
S32
G=G-1
X=NINT X-1
S33
NO
IS X<0?
S34
YES
U=G-1
Y=Y-1
S35
END

FIG. 3

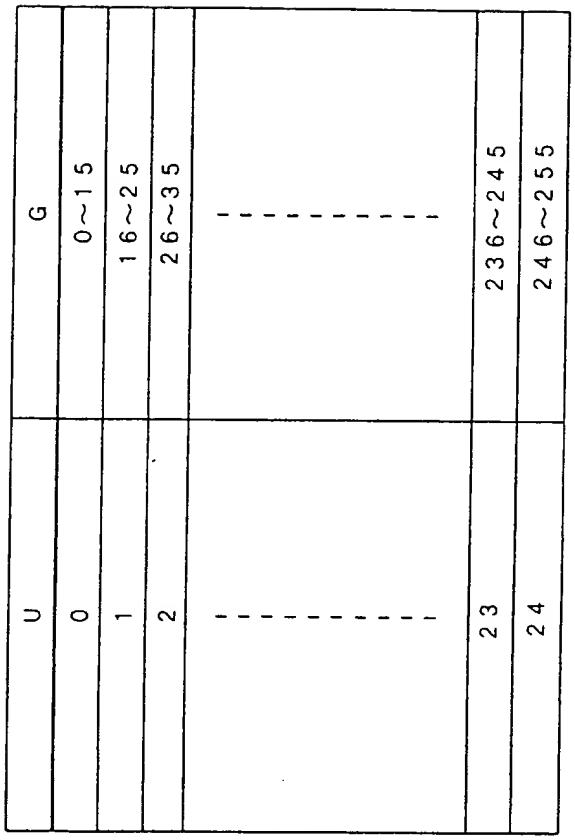


FIG. 4

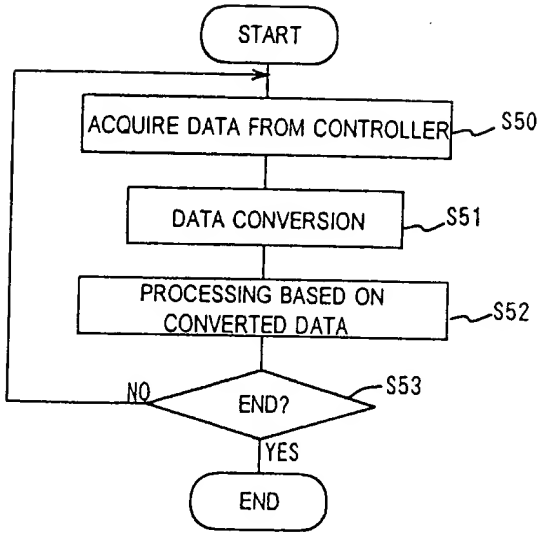

START
ACQUIRE DATA FROM CONTROLLER
S50
DATA CONVERSION
S51
PROCESSING BASED ON CONVERTED DATA
S52
NO
END?
S53
YES
END

FIG. 5

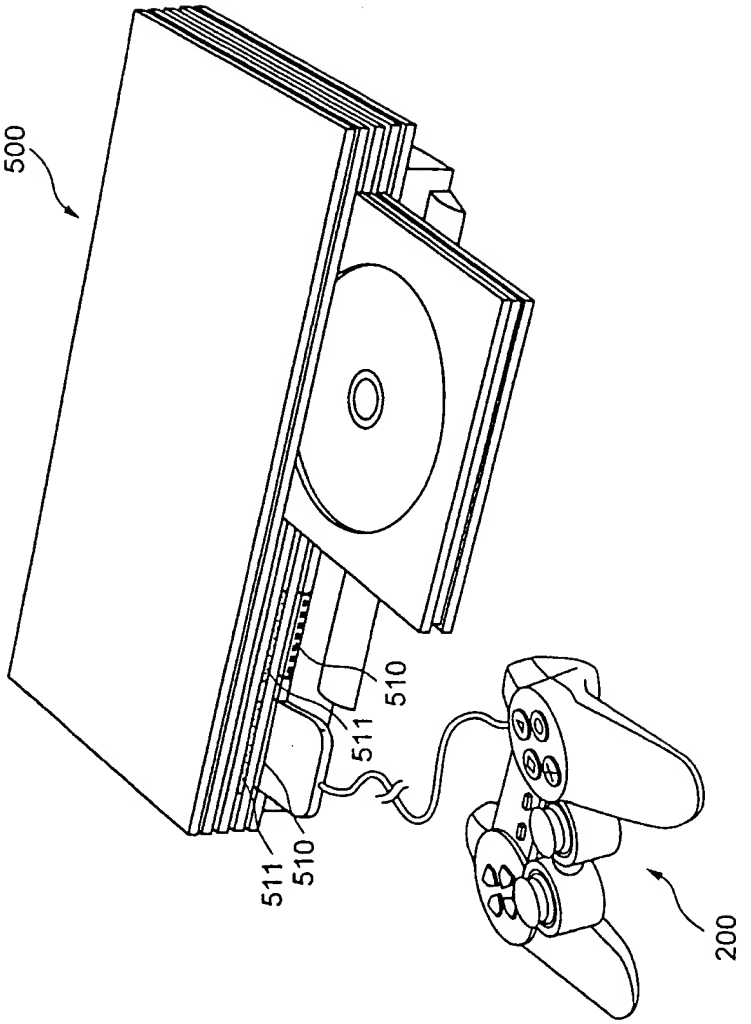


FIG. 6

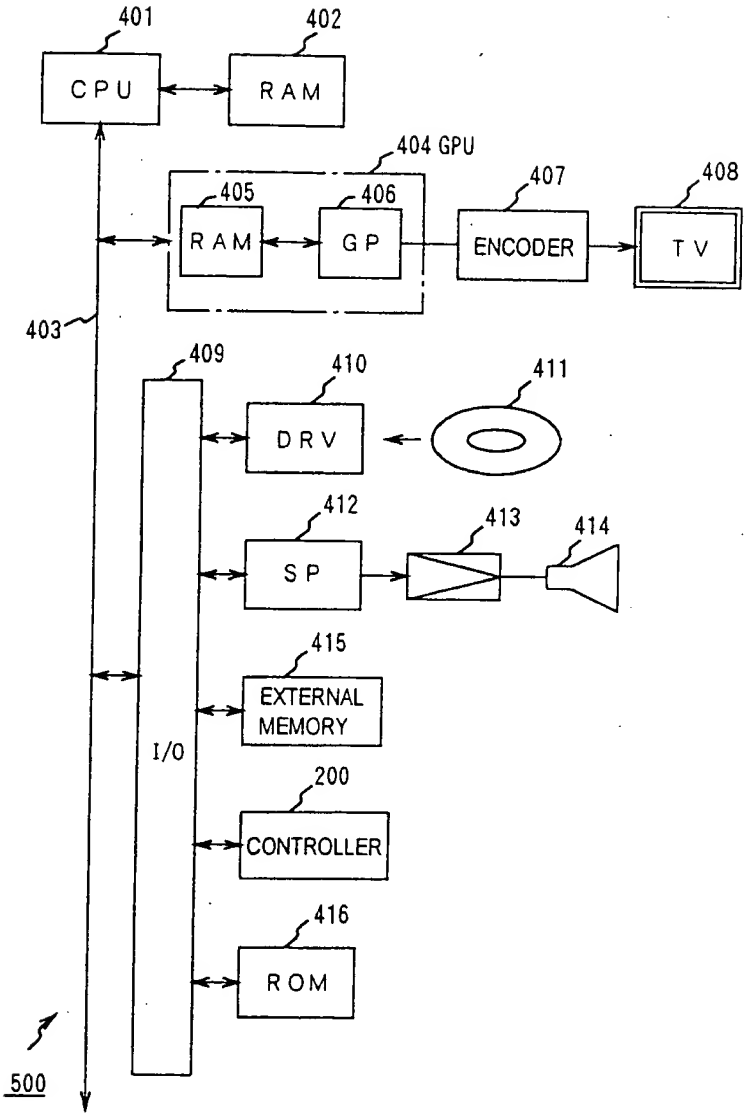

401
CPU
402
RAM
404 GPU
405
RAM
406
GP
407
ENCODER
408
TV
403
409
I/O
410
DRV
411
412
SP
413
414
415
EXTERNAL MEMORY
200
CONTROLLER
416
ROM
500

FIG. 7

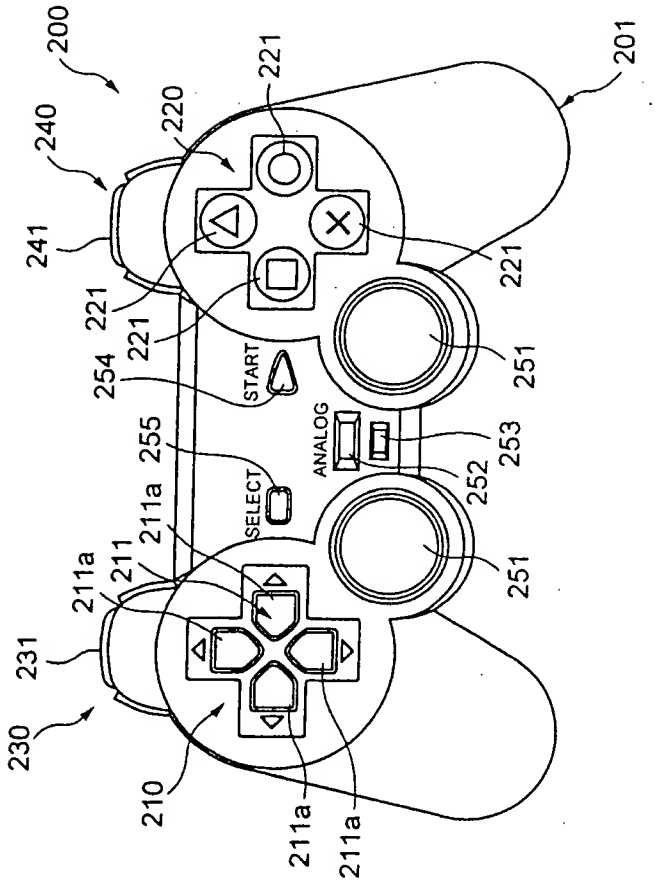

200
240
241
220
221
221
221
221
201
254
START
251
255
ANALOG
253
252
SELECT
211a
211
211a
251
231
230
210
211a
211a

FIG. 8

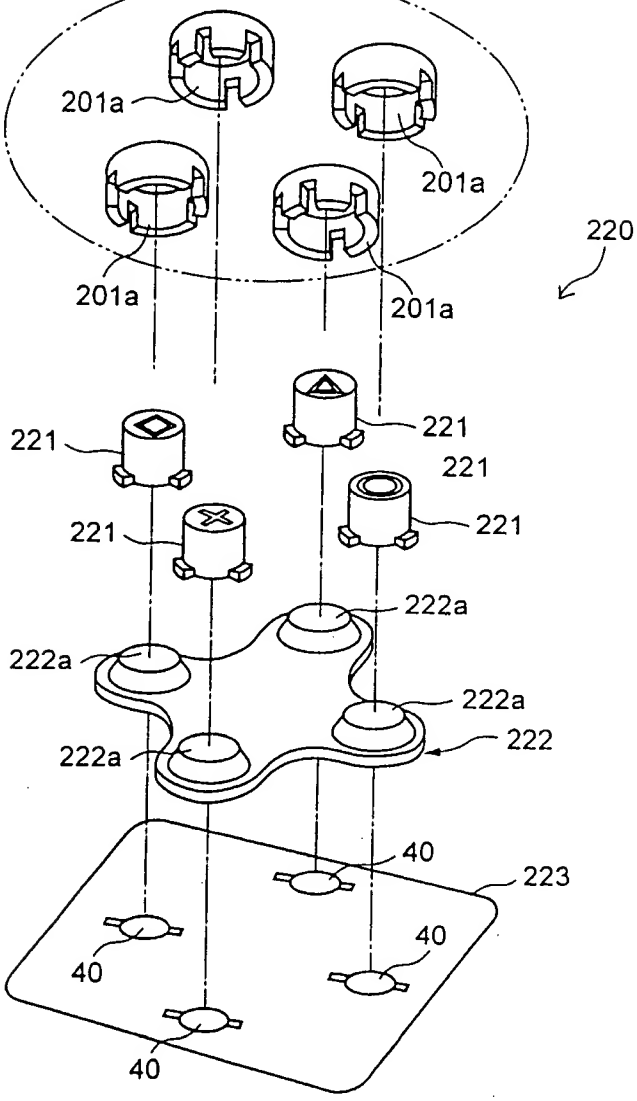

201a
201a
201a
201a
220
221
221
221
221
221
222a
222a
222a
222a
222
40
223
40
40
40

FIG. 9

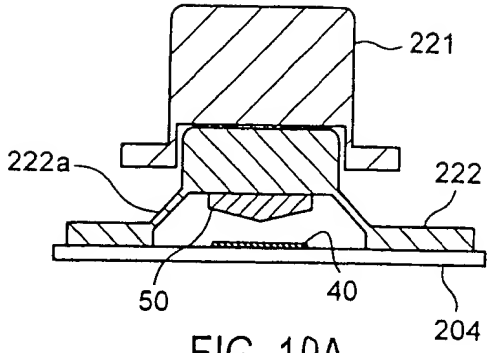


FIG. 10A

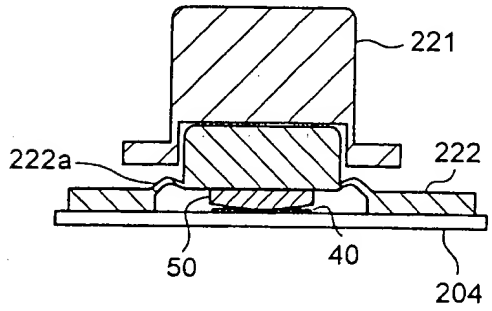


FIG. 10B

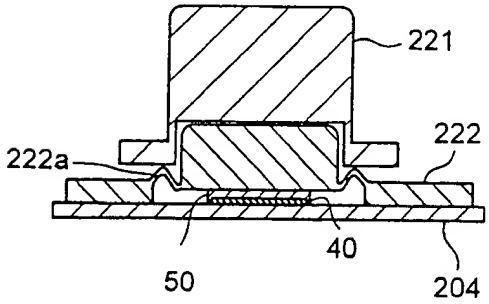


FIG. 10C

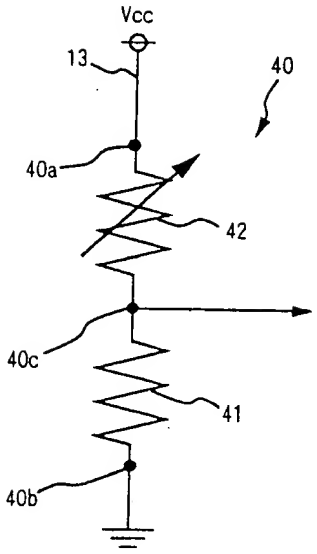


FIG. 11

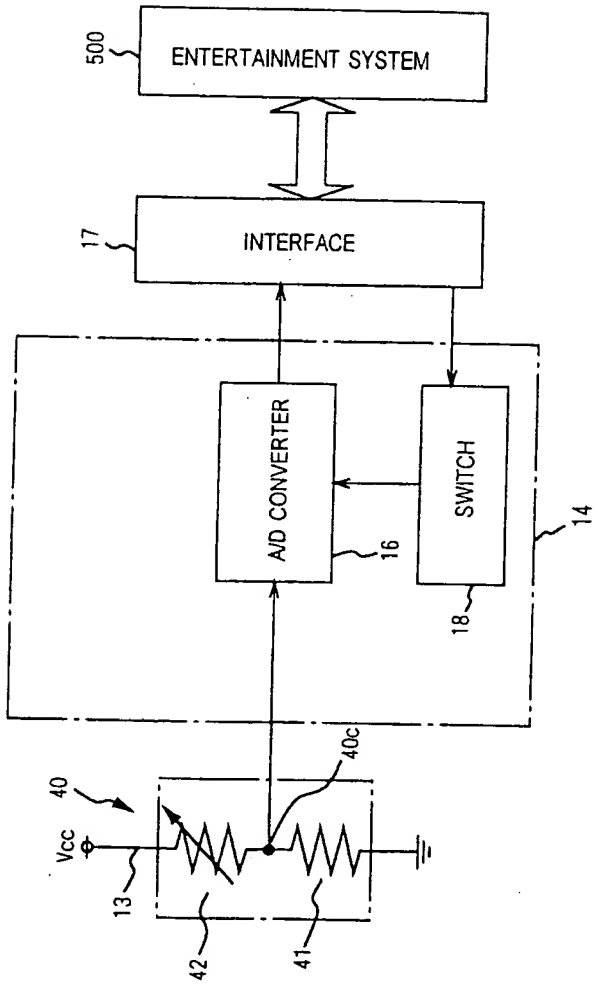

500
ENTERTAINMENT SYSTEM
17
INTERFACE
A/D CONVERTER
16
SWITCH
18
14
40
40c
Vcc
13
42
41

FIG. 12

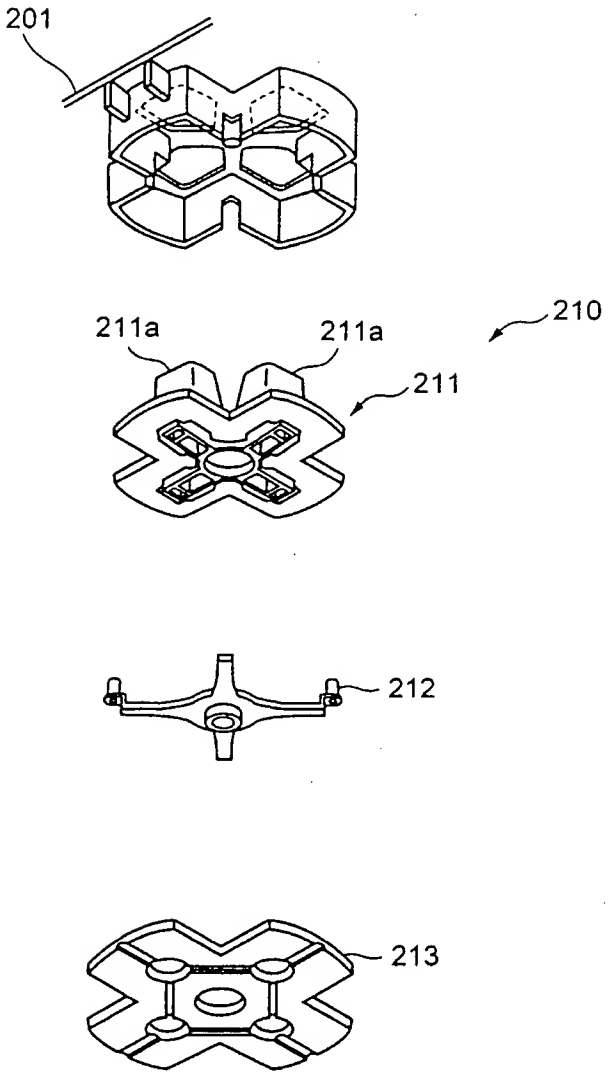


FIG. 13

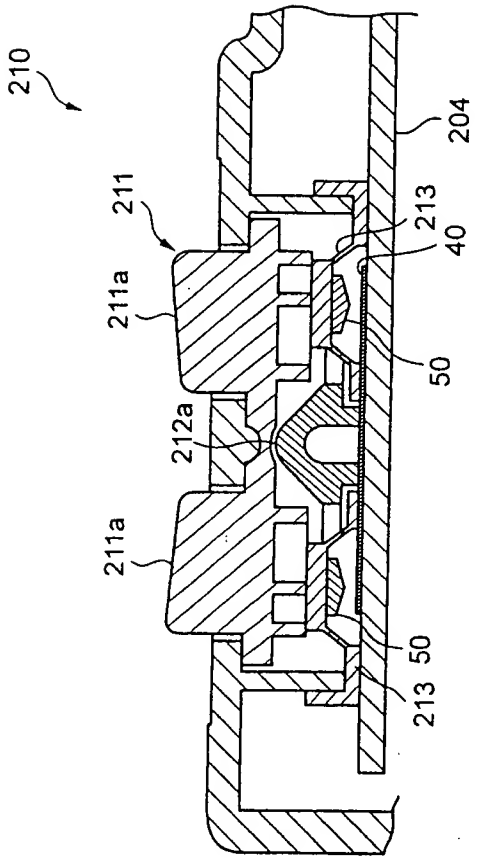


FIG. 14

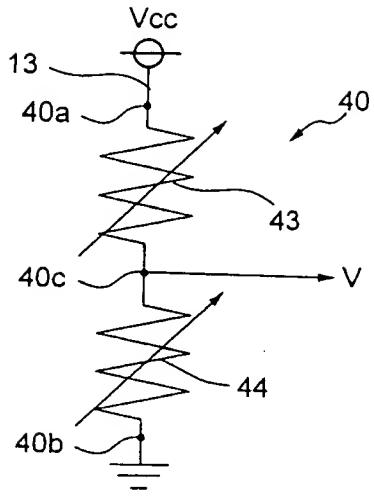


FIG. 15

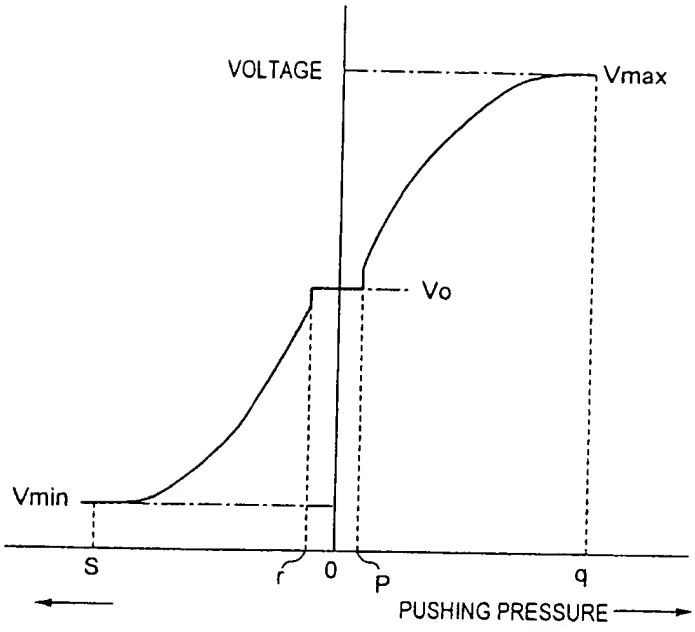


FIG. 16

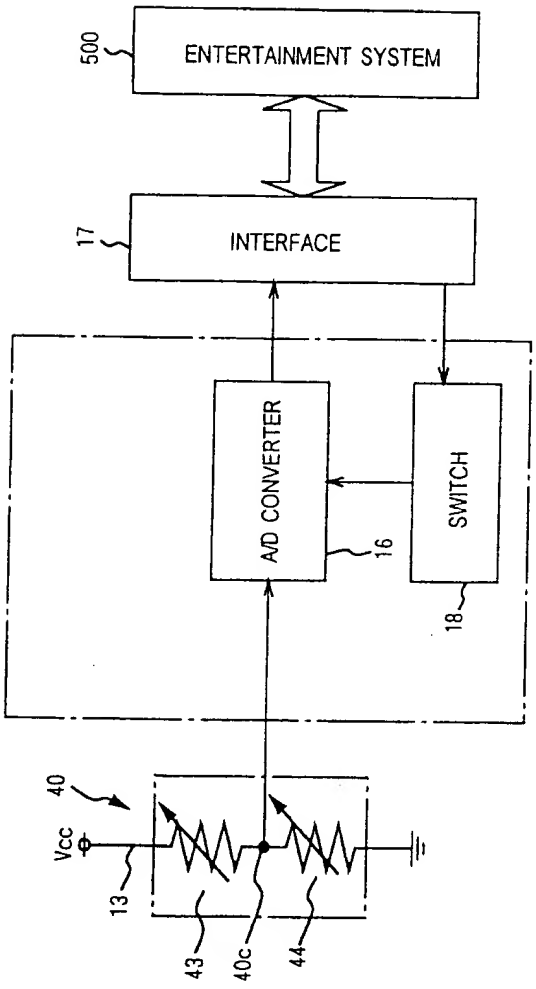

500
ENTERTAINMENT SYSTEM
17
INTERFACE
A/D CONVERTER
16
SWITCH
18
40
Vcc
13
43
40c
44

FIG. 17

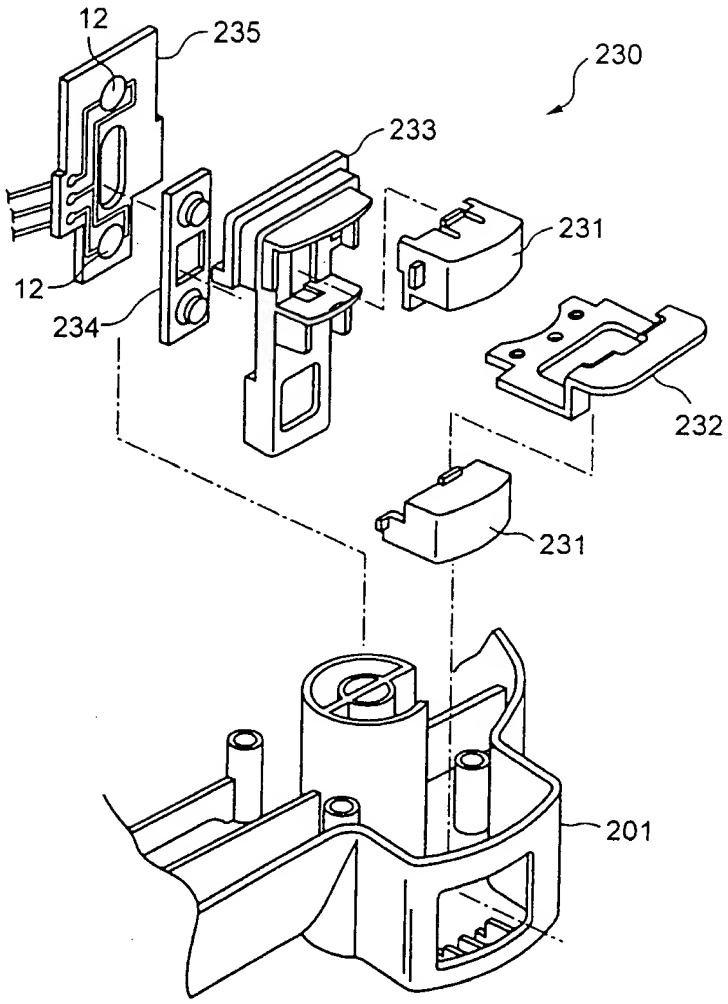


FIG. 18

2000-040257

Brief History Information of Applicant for Patent

Identification Number	[395015319]
1. Date of alteration	March 31, 1997
[Reason for alteration]	Change of Address
Address:	1-1, Akasaka 7-chome, Minato-ku, Tokyo
Name:	Sony Computer Entertainment Inc.

Attorney Docket No.: SCEI 17.966 (100809-16191)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Nobuhiro KOMATA
Serial No.:	09/758,033
Filed:	January 10, 2001
Title:	**Computer System Having A Pressure-Sensitive Controller,...**
Examiner:	Prabodh M. Dharia
Group Art Unit:	2673
Confirmation No.:	8282

March 13, 2008

Mail Stop Petition
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

S I R:

In response to the non-final Office Action dated on or about October 15, 2002, please amend the subject application based on the following:

I. A complete listing of the claims appears on page 2 of this paper; and

II. Remarks appear on page 13 of this paper;

III. A certified translation of the priority document accompanies this paper; and

IV. A Petition for Revival of Patent Application Unintentionally Abandoned accompanies this paper.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Filed by Express Mail
Receipt No. EV479707156US
on 3-13-2008
pursuant to 37 C.F.R. 1.10.
By Frances Doyle
Frances Doyle

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings of claims in the present application.

What Is Claimed Is:

1. (currently amended) A setup method for a controller that gives instructions to a computer running software depending on a pushing pressure by a user on a control element connected to a pressure-sensitive device of the controller, the ~~method,~~method comprising:

an instruction step wherein the user is instructed to push said control element with at least a maximum strength,

a storage step wherein a value obtained when said control element is pushed by the user, is stored as the maximum value; and

a correction step wherein, based on said maximum value and a pressure-sensing value table defined in said software ~~or various pressure-sensing values~~, a new corrected pressure-sensing value table ~~or various new corrected pressure-sensing values are~~is generated.

2. (currently amended) A recording medium on which is recorded a computer-readable and executable software program containing a setup program for a controller that gives instructions to a computer running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller; wherein said setup program comprises:

an instruction step wherein the user is instructed to push said control element with at least a maximum strength;

a storage step wherein a value obtained when said control element is pushed by the user is stored as the maximum value, and

a correction step wherein, based on said maximum value and a pressure-sensing value table defined in said software ~~or various pressure-sensing values~~, a new corrected pressure-sensing value table ~~or various new corrected pressure-sensing values are~~is generated.

3. (original) The recording medium according to claim 2, wherein said corrected pressure-sensing value table or various corrected pressure-sensing values are stored in a storage unit provided internally in or external of said computer.

4. (currently amended) A computer system comprising:

a pressure-sensitive controller that gives instructions to a computer processor running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller;

instruction providing means for instructing the user to push said control element with at least a maximum strength;

storage means for storing a value obtained when said control element is pushed by the user as the maximum value; and

correction means for generating, based on said maximum value and a pressure-sensing value table defined in software ~~or various pressure-sensing values~~, a new corrected pressure-sensing value table ~~or various new corrected pressure-sensing values~~.

5. (original) The computer system according to claim 4, wherein said corrected pressure-sensing value table or various corrected pressure-sensing values are stored in a storage unit internal to or external to said computer.

6. (original) The computer system according to claim 4, which is an entertainment system.

7. (original) The computer system according to claim 5, which is an entertainment system.

8. (original) A computer system comprising:

a controller that gives instructions to running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller;

means for measuring a maximum user pressure-sensing value which is the maximum pushing pressure of the user;

means for acquiring a maximum game pressure-sensing value set by said software; and

correction means for making said maximum user pressure-sense value to correspond to said maximum game pressure-sense value, and calculating intermediate values until the maximum user pressure-sensing value is reached proportionally corresponding to the game pressure-sensing values;

wherein the user pressure-sensing value which is the pushing pressure of the user on the control element is corrected by said correction means and used in said software.

9. (original) The computer system according to claim 8, wherein said correction means has a correction table for correcting said user pressure-sensing values to said game pressure-sensing values.

10. (original) The computer system according to claim 9, wherein said correction table is prepared based on a stipulated program.

11. (original) The computer system according to claim 9, wherein said correction table is prepared based on predetermined calculations.

12. (original) A computer system comprising:

a controller that gives instructions to running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of said controller;

means for measuring user pressure-sensing values which are pushing pressures of the user;

means for acquiring game pressure-sensing values set by said software; and

correction means for correcting said user pressure-sensing values to correspond to game pressure-sense values based on a stipulated function;

wherein the user pressure-sensing value which is the pushing pressure of the user on the control element is corrected by said correction means and used in said software.

13. (original) The computer system according to claim 12, wherein said correction means has a correction table for correcting said user pressure-sensing values to correspond to said game pressure-sensing values based on said stipulated function.

14. (original) The computer system according to claim 12, wherein said stipulated function is selected from a group consisting of second-order functions, higher-order functions, exponential functions and trigonometric functions, depending on characteristics of the instructions controlled by said control element.

15. (original) The computer system according to claim 13, wherein said correction table is prepared based on a stipulated program.

16. (original) The computer system according to claim 13, wherein said correction table is prepared based on predetermined calculations.

17. (original) A computer system comprising:

a controller that gives instructions to running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of said controller;

means for measuring a maximum user pressure-sensing value rate of change which is the most rapid pushing pressure of the user;

means for acquiring a maximum game pressure-sensing value rate of change set by said software, and

correction means for making said maximum user pressure-sensing value rate of change to correspond to said maximum game pressure-sensing value rate of change, and calculating intermediate values until the maximum user pressure-sensing value rate of change is reached proportionally corresponding to the game pressure-sensing value rate of change;

wherein the user pressure-sensing value rate of change which is a pushing speed of the user on the control element is corrected by said correction means and used in said software.

18. (original) The computer system according to claim 17, wherein said correction means has a correction table for correcting said user pressure-sensing value rate of change to correspond to said game pressure-sensing value rate of change.

19. (original) The computer system according to claim 18, wherein said correction table is prepared based on a stipulated program.

20. (original) The computer system according to claim 18, wherein said correction table is prepared based on predetermined calculations.

21. (original) A setup method for a controller that gives instructions to a computer running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller, the setup method comprising the steps of:

measuring a maximum user pressure-sensing value which is the maximum pushing pressure of the user;

acquiring a maximum game pressure-sensing value set by said software; and

performing a correction step whereby said maximum user pressure-sensing value is made to correspond to said maximum game pressure-sensing value, and intermediate values until the maximum user pressure-sensing value is reached are calculated proportionally corresponding to the game pressure-sensing values; wherein

the user pressure-sensing value which is the pushing pressure of the user on the control element is corrected by said correction means and used in said software.

22. (original) The setup method according to claim 21, wherein said correction means has a correction table for correcting said user pressure-sensing values to correspond to said game pressure-sensing values.

23. (original) The setup method according to claim 22, wherein said correction table is prepared based on a stipulated program.

24. (original) A setup method for a controller that gives instructions to a computer running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller, the setup method comprising the steps of:

measuring a user pressure-sensing value which is the pushing pressure of the user;

acquiring a game pressure-sensing value set by said software; and

performing a correction step whereby said user pressure-sensing value is corrected to correspond to said game pressure-sensing value; wherein

the user pressure-sensing value which is the pushing pressure of the user on the control element is corrected by said correction step and used in said software.

25. (original) The setup method according to claim 24, wherein said correction step a correction table issued for correcting said user pressure-sensing values to correspond to said game pressure-sensing values.

26. (original) The setup method according to claim 25, wherein said correction table is prepared based on a stipulated function.

27. (original) The setup method according to claim 26, wherein said stipulated function is selected from a group consisting of second-order functions, higher-order functions, exponential functions and trigonometric functions, depending on characteristics of the instructions controlled by said control element.

28. (original) The setup method according to claim 25, wherein said correction table is prepared based on a stipulated program.

29. (original) The computer system according to claim 25, wherein said correction table is prepared based on predetermined calculations.

30. (original) A setup method for a controller that gives instructions to a computer running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller, the setup method comprising the steps of:

measuring a maximum user pressure-sensing value rate of change which is the most rapid pushing pressure of the user,

acquiring a maximum game pressure-sensing value rate of change set by said software; and

performing a correction step whereby said maximum user pressure-sensing value rate of change is made to correspond to said maximum game pressure-sensing value rate of change, and intermediate values until the maximum user pressure-sensing value rate of change is reached are calculated proportionally corresponding to the game pressure-sensing value rate of change; wherein

the user pressure-sensing value rate of change which is the pushing speed of the user on the control element is corrected by said correction means and used in said software.

31. (original) The setup method according to claim 30, wherein said correction means has a correction table for correcting said user pressure-sensing value rate of change to correspond said game pressure-sensing value rate of change.

32. (original) The setup method according to claim 31, wherein said correction table is prepared based on a stipulated program.

33. (original) The setup method according to claim 31, wherein said correction table is prepared based on predetermined calculations.

34. (original) A recording medium on which is recorded a computer-readable and executable software program containing a setup program for a controller that gives instructions to a computer running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller,

said setup program comprising the steps of:

measuring a maximum user pressure-sensing value which is the maximum pushing pressure of the user;

acquiring a maximum game pressure-sensing value set by said software; and

performing correction to make said maximum user pressure-sensing value to correspond to said maximum game pressure-sensing value, and calculate intermediate values until the maximum user pressure-sensing value is reached proportionally corresponding to the game pressure-sensing values.

35. (original) A recording medium on which is recorded a computer-readable and executable software program containing a setup program for a controller that gives instructions to a computer running software depending on a pushing pressure by a user on a control element connected to a pressure-sensitive device of the controller,

said setup program comprising the steps of:

measuring user pressure-sensing values which are the pushing pressures of the user;

acquiring game pressure-sensing values set by said software; and

performing correction to correct said user pressure-sensing values to correspond to game pressure-sensing values based on a stipulated function.

36. (original) A recording medium on which is recorded a computer-readable and executable software program containing a setup program for a controller that gives instructions to a computer running software depending on a pushing pressure of a user on a control element connected to a pressure-sensitive device of the controller, said setup program comprising the steps of:

measuring a maximum user pressure-sensing value rate of change which is the most rapid pushing pressure of the user,

acquiring a maximum game pressure-sensing value rate of change set by said software; and

performing correction to make said maximum user pressure-sensing value rate of change to correspond to said maximum game pressure-sensing value rate of change, and calculate intermediate values until the maximum user pressure-sensing value rate of change is reached proportionally corresponding to the game pressure-sensing value rate of change.

37. (new) The setup method of claim 1, wherein the correction step further includes generating various new corrected pressure-sensing values based on said maximum value and various pressure-sensing values defined in said software.

38. (new) The setup method of claim 1, wherein the new corrected pressure-sensing value table is used when the computer executes the software to correct the pushing pressure by the user to a corrected pushing pressure value.

REMARKS

Claims 1-38 are pending in the instant application after this amendment adds new claims 37 and 38. Claims 1, 2, and 4 are amended herein. No new matter is added by the amendments and new claim, which are supported throughout the specification and figures. In particular, new claim 37 is supported at least by original claim 1, and new claim 38 is supported at least at page 9, lines 18-23, of the specification. In view of the following remarks, favorable reconsideration of this application is respectfully requested.

Claims 1-5 and 8 are rejected under 35 U.S.C. § 102(e) as being anticipated by EP 0 922 431 to Amano et al. (hereinafter Amano). Claims 6 and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Amano in view of U.S. Patent No. 6,402,616 to Ogata et al. (hereinafter Ogata). Applicants respectfully traverse.

Claim 1 relates to a setup method for a controller that gives instructions to a computer running software depending on a pushing pressure by a user on a control element connected to a pressure-sensitive device of the controller. The method of claim 1 includes, *inter alia*, an instruction step wherein the user is instructed to push said control element with at least a maximum strength, and a storage step wherein a value obtained when said control element is pushed by the user, is stored as the maximum value. The method of amended claim 1 further includes ***a correction step*** wherein, based on said maximum value ***and a pressure-sensing value table defined in said software***, a new corrected pressure-sensing value table is generated.

The Office Action relies on Amano as alleged disclosure of the correction step recited in the claim. In particular, the Office Action cites to Amano at col. 14, lines 27-32 and col. 17, lines 3-5 (Office Action; page 3, lines 1-5). However, Amano relates to determining the pressure of an individual when applying pressure in order to read a pulse on an individual. Amano apparently

measures pressure being exerted by an individual, and sets up a chart based on the results of the measurement. Amano discloses a touch detecting device, as in Figure 4, used to detect the grip state when an individual grips an object (paragraph 0001). The touch detecting device in Amano apparently includes a calibration table 50 used when detecting touch, a threshold value table 51 used when grading touch information, and a data register 52 for storing various data (Amano; paragraph 0072). When a CPU 4 displays the message "Please apply more force" on LCD 108, a user presses pressure sensor 11 with maximal force. At this time Pmax, the maximum value for the degree of pressure, and Lmin, the minimum value for the DC component, are detected (Amano; paragraph 0087). Then, the CPU 4 reads out the maximum value Pmax for the degree of pressure from data register 52, equally divides maximum value Pmax in response to the number of gradings, and determines each of the threshold values for the degree of pressure (paragraph 0088). However, as is apparent from Amano, col. 32, lines 25-29, calibration table 50 is NOT prepared beforehand, but is rather generated ***as a result*** of a pressure sensor measurement.

In contrast, in the instant invention, as in Fig. 1A, when the maximum value that can be achieved by a user is measured for each individual user, the correction is performed such that the maximum value ***corresponds*** to the maximum setting ***set in advance*** for a game or other type of software, etc., and the intermediate values are calculated proportionally (Specification; page 9, lines 8-13). By using the game pressure-sensing values corresponding to the user pressure-sensing values as the corrected user pressure-sensing values, problems due to the difference in body weights among individual users may be avoided (Specification; page 9, lines 20-23). In Amano, the maximum value Pmax is merely equally divided in response to the number of gradings, while in the instant invention the maximum value is ***first made to correspond to the***

maximum setting set in advance for a game or other type of software, etc., and ***then the intermediate values are calculated proportionally***. Amano does not disclose or suggest any correspondence made between the maximum value by a user and t***he maximum setting set in advance for a game***, and therefore Amano does not disclose or suggest a correction step wherein, based on said maximum value and ***a pressure-sensing value table defined in said software, a new corrected pressure-sensing value table is generated***. Therefore, for at least this reason claim 1 is allowable.

Independent claims 2, 4, 8, 12, 17, 21, 24, 30, and 34-36 include feature similar to those discussed above in regard to claim 1, and therefore each of these claims is allowable for at least the same reasons as claim 1 is allowable.

Each of the remaining dependent claims includes the feature of the independent claims from which they depend, and therefore each of these claims is allowable for at least the same reasons as their respective base claim is allowable.

Additionally, in connection with claim 8, which recites ***means for acquiring a maximum game pressure-sensing value set by said software***, and correction means for making said maximum user pressure-sense value to correspond to said maximum game pressure-sense value, and calculating intermediate values until the maximum user pressure-sensing value is reached proportionally corresponding to the game pressure-sensing values, Applicants submit that Amano does not disclose ***acquiring a game pressure-sensing value set by software*** since Amano does not disclose a game, nor a pressure value set by a software. Therefore, for at least this reason claim 8 is allowable.

Claims 9-33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Amano in view of U.S. Patent No. 6,347,997 to Armstrong (hereinafter Armstrong). Claims 34-36 are

rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogata and Amano in view of Armstrong. Applicants respectfully traverse.

Armstrong has a filing date of May 10, 2000. With the filing of the certified translation of the priority document, the instant application claims the full benefit of the priority date of the instant application, namely January 14, 2000. Therefore, it is respectfully submitted that Armstrong is not prior art with respect to the instant application, and the rejections based on Armstrong are obviated.

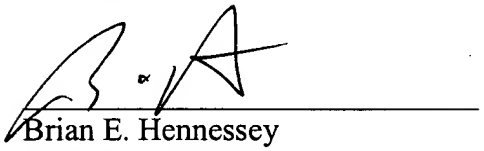
New claims 37 and 38 depend from claim 1 and are therefore allowable for at least the same reasons as claim 1 is allowable.

Additionally, new claim 38 recites that the new corrected pressure-sensing value table is used when the computer executes the software to correct the pushing pressure by the user to a corrected pushing pressure value. Since Amano does not relate to correcting a pressure ***during*** execution of software, Amano does not disclose or suggest the features of new claim 38, and therefore the new claim is allowable for at least this additional reason.

In view of the remarks set forth above, this application is believed to be in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,



Brian E. Hennessey
Reg. No. 51,271

CUSTOMER NUMBER 026304

Telephone: (212) 940-6311
Fax: (212) 940-8986
Docket No.: SCEI 17.966 (100809-16191)
BEH:fd